

AMENDMENT IN THE CLAIMS

Please amend claim 1 to read as follows:

Sub 1
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BB 10
BB 11
BB 12
BB 13
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BB 15

1. (Currently Amended) An apparatus, comprising:

a converter converting an input optical signal to an original electrical signal;

an identification unit receiving said original electrical signal, generating a first signal

corresponding to said original electrical signal delayed by a predetermined quantity of time,

generating a second signal corresponding to said original signal not delayed, comparing said

first and second signals, forming a third signal in dependence upon said comparing of said first and

second signals, detecting a bit rate in dependence upon said third signal;

a clock generator generating a reference clock signal in dependence upon said detected bit

rate; and

a recovery unit recovering an input clock signal and data from said input optical signal in

dependence upon said reference clock signal, and wherein said identification unit further comprises:

a first unit delaying said electrical signal, performing said exclusive -OR operation upon said

first and second signals, and forming said third signal; and

a second unit filtering said third signal, and detecting said bit rate in dependence upon a

voltage level of said filtered third signal.

2. (Original) The apparatus of claim 1, said apparatus corresponding to an optical receiver

receiving optical signals having a plurality of different bit rates.

1 3. (Original) The apparatus of claim 1, said bit rate of said input optical signal corresponding

2 to a transmission rate.

1 4.(Original) The apparatus of claim 1, further comprising an amplifier amplifying said
2 original electrical signal received from said converter.

1 5.(Original) The apparatus of claim 4, said amplifier outputting said amplified electrical

2 signal to said identification unit.

1 6.(Original) The apparatus of claim 1, said converter corresponding to an optoelectric

2 converter.

1 7.(Original) The apparatus of claim 1, said identification unit corresponding to a bit rate

2 identification unit.

1 8.(Original) The apparatus of claim 1, said comparing performed by said identification unit

2 corresponding to said identification unit performing an exclusive-OR logic operation upon said first

3 and second signals.

1 9.(Original) The apparatus of claim 8, said forming of said third signal performed by said

2 identification unit corresponding to said identification unit forming said third signal in dependence

3 upon said exclusive-OR logic operation performed upon said first and second signals.

1 10.(Original) The apparatus of claim 9, said identification unit comprising:

2 a first unit delaying said original electrical signal, performing said exclusive-OR operation

3 upon said first and second signals, and forming said third signal; and

4 a second unit filtering said third signal, detecting said bit rate in dependence upon a voltage

5 level of said filtered third signal.

1 11.(Original) The apparatus of claim 10, said filtering corresponding to low-pass filtering.

1 12.(Original) The apparatus of claim 10, said first unit corresponding to a bit rate

2 identification signal generator.

1 13.(Original) The apparatus of claim 10, said second unit corresponding to a bit rate

2 deriving unit.

1 14.(Original) The apparatus of claim 10, said second unit comprising:

2 a filter filtering said third signal;

3 an analog-to-digital converter receiving said filtered third signal, converting said filtered third

4 signal from an analog signal to a digital signal; and

5 a determiner determining said bit rate in dependence upon said digital signal received from

6 said analog-to-digital converter.

15.(Original) The apparatus of claim 10, said first unit comprising:

2 a buffer unit receiving said original electrical signal, outputting two duplicate signals
3 substantially equivalent to said original electrical signal, said two duplicate signals corresponding
4 to a primary signal and a secondary signal;

5 a delay unit receiving said primary signal, delaying said primary signal by said predetermined
6 quantity of time, outputting said primary signal, said delayed primary signal corresponding to said
7 first signal; and

8 an operator unit performing said exclusive-OR logic operation upon said first and second
9 signals.

16.(Original) The apparatus of claim 1, said clock generator comprising a plurality of
2 oscillators generating clocking signals of different frequencies and selectively operating said
3 oscillators to generate said reference clock signal in dependence upon said bit rate detected by said
4 identification unit.

17.(Original) A method of operating a receiver which functions independently of a bit rate
2 of a received signal, comprising:

3 receiving an original signal;

4 generating a resultant signal by comparing a first signal and a second signal, said first signal

5 corresponding to said original signal delayed by a predetermined quantity of time, said second signal
6 corresponding to said original signal not delayed;
7 determining a bit rate of said original signal in dependence upon said resultant signal;
8 generating a reference clock signal in dependence upon said determined bit rate; and
9 recovering an input clock signal and data from said original signal in dependence upon said
10 ~~reference clock signal.~~

1 18.(Original) The method of claim 17, said comparing of said first and second signals
2 corresponding to performing an exclusive-OR logic operation upon said first and second signals, said
3 resultant signal being generated as a result of said exclusive-OR logic operation.

1 19.(Original) The method of claim 18, further comprising:
2 said original signal corresponding to an input optical signal;
3 converting said input optical signal to an electrical signal;
4 outputting two duplicate signals substantially equivalent to said electrical signal, said two
5 duplicate signals corresponding to a primary signal and a secondary signal; and
6 delaying said primary signal by said predetermined quantity of time, outputting said primary
7 signal, said delayed primary signal corresponding to said first signal.

1 20.(Original) The method of claim 17, said first, second, and third signals corresponding
2 to ~~electrical signals.~~

1 21.(Original) The method of claim 17, said method corresponding to receiving signals
2 having a plurality of different bit rates.

1 22.(Original) The method of claim 17, said original signal received corresponding to a
2 plurality of original signals received, said recovering of said input clock signal and data from said
3 original signal being performed for said plurality of original signals received, said plurality of
4 original signals received having a respective plurality of different bit rates.

1 23.(Original) The method of claim 17, said recovering of said input clock signal and data
2 from said original signal being performed for a plurality of original signals received, said plurality
3 of original signals received having a respective plurality of different bit rates.

1 24.(Original) The method of claim 17, said method corresponding to receiving optical
2 signals having a plurality of different bit rates.

1 25.(Original) The method of claim 17, further comprising:
2 receiving an input optical signal;
3 converting said input optical signal to an original electrical signal;
4 outputting two duplicate signals substantially equivalent to said original electrical signal, said
5 two duplicate signals corresponding to a primary signal and a secondary signal; and

6 delaying said primary signal by said predetermined quantity of time, outputting said primary
7 signal, said delayed primary signal corresponding to said first signal.

26.(Original) The method of claim 17, further comprising:

3 said receiving of said original signal being performed by an optoelectric converter, said
4 original signal being an optic signal, said optoelectric converter converting said original optic signal
 to an electrical signal;

5 outputting two duplicate signals substantially equivalent to said electrical signal, said two
6 duplicate signals corresponding to a primary signal and a secondary signal, said outputting of said
7 two duplicate signals being performed by a buffer; and

8 delaying said primary signal by said predetermined quantity of time, outputting said primary
9 signal, said delayed primary signal corresponding to said first signal.

1 27.(Original) The method of claim 17, said generating of said reference clock signal being
2 performed by a clock generator, said clock generator comprising a plurality of oscillators generating
3 clocking signals of different frequencies and selectively operating said oscillators to generate said
4 reference clock signal in dependence upon said detected bit rate.

1 28.(Original) An apparatus, comprising:

2 a converter converting an input optical signal to an original electrical signal;

3 an identification unit receiving said original electrical signal, generating a first signal

4 corresponding to said original electrical signal delayed by a predetermined quantity of time, generating
5 a second signal corresponding to said original electrical signal not delayed, forming a third signal
6 by performing an exclusive-OR logic operation upon said first and second signals, detecting a bit rate
7 in dependence upon said third signal;

8 a clock generator generating a reference clock signal in dependence upon said detected bit
9 rate; and

10 a recovery unit recovering an input clock signal and data from said input optical signal in
11 dependence upon said reference clock signal.

1 29.(Original) The apparatus of claim 28, said clock generator comprising a plurality of
2 oscillators generating clocking signals of different frequencies and selectively operating said
3 oscillators to generate said reference clock signal in dependence upon said bit rate detected by said
4 identification unit.

1 30.(Original) The apparatus of claim 28, said input optical signal corresponding to a
2 plurality of input optical signals, said recovering of said input clock signal and data from said input
3 optical signal being performed for each of said plurality of input optical signals, said plurality of
4 input optical signals received having a plurality of different bit rates.

1 31.(Original) The apparatus of claim 30, said converter corresponding to an optoelectric
2 converter.

1 32.(Original) The apparatus of claim 31, said identification unit corresponding to a bit rate
2 identification unit.

1 33.(Original) The apparatus of claim 32, said identification unit comprising:
2 a first unit delaying said original electrical signal, performing said exclusive-OR operation
3 upon said first and second signals, and forming said third signal; and
4 a second unit filtering said third signal, detecting said bit rate in dependence upon a voltage
5 level of said filtered third signal.

1 34.(Original) The apparatus of claim 33, said second unit comprising:
2 a filter filtering said third signal;
3 an analog-to-digital converter receiving said filtered third signal, converting said filtered third
4 signal from an analog signal to a digital signal; and
5 a determiner determining said bit rate in dependence upon said digital signal received from
6 said analog-to-digital converter.

1 35.(Original) The apparatus of claim 33, said first unit comprising:
2 a buffer unit receiving said original electrical signal, outputting two duplicate signals
3 substantially equivalent to said original electrical signal, said two duplicate signals corresponding
4 to a primary signal and a secondary signal;

5 a delay unit receiving said primary signal, delaying said primary signal by said predetermined
6 quantity of time, outputting said primary signal, said delayed primary signal corresponding to said
7 first signal; and

8 an operator unit performing said exclusive-OR logic operation upon said first and second
9 signals.

1 36.(Original) The apparatus of claim 33, said clock generator comprising a plurality of
2 oscillators generating clocking signals of different frequencies and selectively operating said
3 oscillators to generate said reference clock signal in dependence upon said bit rate detected by said
4 identification unit.

1 37.(Original) The apparatus of claim 33, said filtering corresponding to low-pass filtering.

1 38.(Original) The apparatus of claim 37, said second unit comprising:

2 a filter filtering said third signal;

3 an analog-to-digital converter receiving said filtered third signal, converting said filtered third
4 signal from an analog signal to a digital signal; and

5 a determiner determining said bit rate in dependence upon said digital signal received from
6 said analog-to-digital converter.

1 39.(Original) The apparatus of claim 38, said first unit comprising:

2 a buffer unit receiving said original electrical signal, outputting two duplicate signals
3 substantially equivalent to said original electrical signal, said two duplicate signals corresponding
4 to a primary signal and a secondary signal;

5 a delay unit receiving said primary signal, delaying said primary signal by said predetermined
6 quantity of time, outputting said primary signal, said delayed primary signal corresponding to said
7 first signal; and

8 an operator unit performing said exclusive-OR logic operation upon said first and second
9 signals.

1 40.(Original) The apparatus of claim 39, said clock generator comprising a plurality of
2 oscillators generating clocking signals of different frequencies and selectively operating said
3 oscillators to generate said reference clock signal in dependence upon said bit rate detected by said
4 identification unit.